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TECH CENTER 1600/2900



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<110> Griffith, Irwin J et al.

<120> T CELL EPITOPES OF RYEGRASS POLLEN ALLERGEN

<130> IMI-040CP3

<140> 08/737,904

<141> 1996-11-20

<150> 08/106,016

<151> 1993-08-13

<160> 61

<170> PatentIn Ver. 2.0

<210> 1

<211> 1229

<212> DNA

<213> Escherichia coli

<220>

<221> CDS

<222> (40)..(942)

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Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Leu Val Ala Gly Pro Ala
10 15 20

gcc tcc tac gcc gct gac gcc ggc tac acc ccc gca gcc gcg gcc acc 150
Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Thr Pro Ala Ala Ala Thr
25 30 35

ccg gct act cct gct gcc acc ccg gct gcg gct gga ggg aag gcg acg 198
Pro Ala Thr Pro Ala Ala Thr Pro Ala Ala Ala Gly Gly Lys Ala Thr
40 45 50

acc gac gag cag aag ctg ctg gag gac gtc aac gct ggc ttc aag gca 246
Thr Asp Glu Gln Lys Leu Leu Glu Asp Val Asn Ala Gly Phe Lys Ala
55 60 65

gcc gtg gcc gcc gct gcc aac gcc cct ccg gcg gac aag ttc aag atc 294
Ala Val Ala Ala Ala Ala Asn Ala Pro Pro Ala Asp Lys Phe Lys Ile
70 75 80 85

ttc gag gcc gcc ttc tcc gag tcc tcc aag ggc ctc ctc gcc acc tcc 342
Phe Glu Ala Ala Phe Ser Glu Ser Ser Lys Gly Leu Leu Ala Thr Ser
90 95 100

gcc gcc aag gca ccc ggc ctc atc ccc aag ctc gac acc gcc tac gac 390
Ala Ala Lys Ala Pro Gly Leu Ile Pro Lys Leu Asp Thr Ala Tyr Asp
105 110 115

gtc gcc tac aag gcc gcc gag ggc gcc acc ccc gag gcc aag tac gac 438

Val	Ala	Tyr	Lys	Ala	Ala	Glu	Gly	Ala	Thr	Pro	Glu	Ala	Lys	Tyr	Asp		
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gcc	ttc	gtc	act	gcc	ctc	acc	gaa	gcg	ctc	cgc	gtc	atc	gcc	ggc	gcc	486	
Ala	Phe	Val	Thr	Ala	Leu	Thr	Glu	Ala	Leu	Arg	Val	Ile	Ala	Gly	Ala		
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ctc	gag	gtc	cac	gcc	gtc	aag	ccc	gcc	acc	gag	gag	gtc	cct	gct	gct	534	
Leu	Glu	Val	His	Ala	Val	Lys	Pro	Ala	Thr	Glu	Glu	Val	Pro	Ala	Ala		
	150				155					160					165		
aag	atc	ccc	acc	ggt	gag	ctg	cag	atc	gtt	gac	aag	atc	gat	gct	gcc	582	
Lys	Ile	Pro	Thr	Gly	Glu	Leu	Gln	Ile	Val	Asp	Lys	Ile	Asp	Ala	Ala		
				170				175						180			
ttc	aag	atc	gca	gcc	acc	gcc	gcc	aac	gcc	gcc	ccc	acc	aac	gat	aag	630	
Phe	Lys	Ile	Ala	Ala	Thr	Ala	Ala	Asn	Ala	Ala	Pro	Thr	Asn	Asp	Lys		
			185					190						195			
ttc	acc	gtc	ttc	gag	agt	gcc	ttc	aac	aag	gcc	ctc	aat	gag	tgc	acg	678	
Phe	Thr	Val	Phe	Glu	Ser	Ala	Phe	Asn	Lys	Ala	Leu	Asn	Glu	Cys	Thr		
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ggc	ggc	gcc	tat	gag	acc	tac	aag	ttc	atc	ccc	tcc	ctc	gag	gcc	gcg	726	
Gly	Gly	Ala	Tyr	Glu	Thr	Tyr	Lys	Phe	Ile	Pro	Ser	Leu	Glu	Ala	Ala		
	215					220					225						
gtc	aag	cag	gcc	tac	gcc	gcc	acc	gtc	gcc	gcc	gcg	ccc	gag	gtc	aag	774	
Val	Lys	Gln	Ala	Tyr	Ala	Ala	Thr	Val	Ala	Ala	Ala	Pro	Glu	Val	Lys		
	230				235					240					245		
tac	gcc	gtc	ttt	gag	gcc	gcg	ctg	acc	aag	gcc	atc	acc	gcc	atg	acc	822	
Tyr	Ala	Val	Phe	Glu	Ala	Ala	Leu	Thr	Lys	Ala	Ile	Thr	Ala	Met	Thr		
				250					255					260			
cag	gca	cag	aag	gcc	ggc	aaa	ccc	gct	gcc	gcc	gct	gcc	aca	ggc	gcc	870	
Gln	Ala	Gln	Lys	Ala	Gly	Lys	Pro	Ala	Ala	Ala	Ala	Ala	Thr	Gly	Ala		
			265					270						275			
gca	acc	gtt	gcc	acc	ggc	gcc	gca	acc	gcc	gcc	gcc	ggg	gct	gcc	acc	918	
Ala	Thr	Val	Ala	Thr	Gly	Ala	Ala	Thr	Ala	Ala	Ala	Gly	Ala	Ala	Thr		
	280					285						290					
gcc	gct	gct	ggt	ggc	tac	aaa	gcc	tgatcagctt	gctaataatac	tactgaacgt	972						
Ala	Ala	Ala	Gly	Gly	Tyr	Lys	Ala										
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 <212> PRT

<213> Escherichia coli

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Ala Ala Ala Ala Thr Pro Ala Thr Pro Ala Ala Thr Pro Ala Ala Ala
35 40 45
Gly Gly Lys Ala Thr Thr Asp Glu Gln Lys Leu Leu Glu Asp Val Asn
50 55 60
Ala Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Asn Ala Pro Pro Ala
65 70 75 80
Asp Lys Phe Lys Ile Phe Glu Ala Ala Phe Ser Glu Ser Ser Lys Gly
85 90 95
Leu Leu Ala Thr Ser Ala Ala Lys Ala Pro Gly Leu Ile Pro Lys Leu
100 105 110
Asp Thr Ala Tyr Asp Val Ala Tyr Lys Ala Ala Glu Gly Ala Thr Pro
115 120 125
Glu Ala Lys Tyr Asp Ala Phe Val Thr Ala Leu Thr Glu Ala Leu Arg
130 135 140
Val Ile Ala Gly Ala Leu Glu Val His Ala Val Lys Pro Ala Thr Glu
145 150 155 160
Glu Val Pro Ala Ala Lys Ile Pro Thr Gly Glu Leu Gln Ile Val Asp
165 170 175
Lys Ile Asp Ala Ala Phe Lys Ile Ala Ala Thr Ala Ala Asn Ala Ala
180 185 190
Pro Thr Asn Asp Lys Phe Thr Val Phe Glu Ser Ala Phe Asn Lys Ala
195 200 205
Leu Asn Glu Cys Thr Gly Gly Ala Tyr Glu Thr Tyr Lys Phe Ile Pro
210 215 220
Ser Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala
225 230 235 240
Ala Pro Glu Val Lys Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala
245 250 255
Ile Thr Ala Met Thr Gln Ala Gln Lys Ala Gly Lys Pro Ala Ala Ala
260 265 270
Ala Ala Thr Gly Ala Ala Thr Val Ala Thr Gly Ala Ala Thr Ala Ala
275 280 285
Ala Gly Ala Ala Thr Ala Ala Ala Gly Gly Tyr Lys Ala
290 295 300

<210> 3
<211> 20
<212> PRT
<213> Escherichia coli

<220>
<223> all occurrences of Xaa=hydroxyproline

<400> 3
Ala Asp Ala Gly Tyr Thr Xaa Ala Ala Ala Thr Xaa Ala Thr Xaa
1 5 10 15

Ala Ala Thr Xaa
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<210> 4
<211> 20
<212> PRT
<213> Escherichia coli

<220>
<223> all occurrences of Xaa=hydroxyproline

<400> 4
Ala Thr Xaa Ala Thr Pro Ala Ala Thr Xaa Ala Ala Ala Gly Gly Lys
1 5 10 15

Ala Thr Thr Asp
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<210> 5
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<220>
<223> all occurrences of Xaa =hydroxyproline

<400> 5
Ala Ala Ala Gly Gly Lys Ala Thr Thr Asp Glu Gln Lys Leu Leu Glu
1 5 10 15

Asp Val Asn Ala
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<211> 20
<212> PRT
<213> Escherichia coli

<400> 6
Glu Gln Lys Leu Leu Glu Asp Val Asn Ala Gly Phe Lys Ala Ala Val
1 5 10 15

Ala Ala Ala Ala
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<210> 7
<211> 16
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<213> Escherichia coli

<400> 7
Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Asn Ala Pro Pro Ala Asp
1 5 10 15

<210> 8
<211> 20
<212> PRT
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<400> 8
Asn Ala Pro Pro Ala Asp Lys Phe Lys Ile Phe Glu Ala Ala Phe Ser
1 5 10 15

Glu Ser Ser Lys
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<210> 9
<211> 20
<212> PRT
<213> Escherichia coli

<400> 9
Phe Glu Ala Ala Phe Ser Glu Ser Ser Lys Gly Leu Leu Ala Thr Ser
1 5 10 15

Ala Ala Lys Ala
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<210> 10
<211> 20
<212> PRT
<213> Escherichia coli

<400> 10
Gly Leu Leu Ala Thr Ser Ala Ala Lys Ala Pro Gly Leu Ile Pro Lys
1 5 10 15

Leu Asp Thr Ala
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<210> 11
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<213> Escherichia coli

<400> 11
Pro Gly Leu Ile Pro Lys Leu Asp Thr Ala Tyr Asp Val Ala Tyr Lys
1 5 10 15

Ala Ala Glu Gly
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<210> 12
<211> 20
<212> PRT
<213> Escherichia coli

<400> 12
Tyr Asp Val Ala Tyr Lys Ala Ala Glu Gly Ala Thr Pro Glu Ala Lys
1 5 10 15

Tyr Asp Ala Phe
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<210> 13
<211> 20
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<400> 13
Ala Thr Pro Glu Ala Lys Tyr Asp Ala Phe Val Thr Ala Leu Thr Glu
1 5 10 15

Ala Leu Arg Val
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<210> 14
<211> 20
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<400> 14
Val Thr Ala Leu Thr Glu Ala Leu Arg Val Ile Ala Gly Ala Leu Glu
1 5 10 15

Val His Ala Val
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<210> 15
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<213> Escherichia coli

<400> 15
Ile Ala Gly Ala Leu Glu Val His Ala Val Lys Pro Ala Thr Glu Glu
1 5 10 15

Val Pro Ala Ala
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<210> 16
<211> 20
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<400> 16
Lys Pro Ala Thr Glu Glu Val Pro Ala Ala Lys Ile Pro Thr Gly Glu
1 5 10 15

Leu Gln Ile Val
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<210> 17
<211> 20
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<213> Escherichia coli

<400> 17
Lys Ile Pro Thr Gly Glu Leu Gln Ile Val Asp Lys Ile Asp Ala Ala
1 5 10 15

Phe Lys Ile Ala
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<210> 18
<211> 20
<212> PRT
<213> Escherichia coli

<400> 18
Asp Lys Ile Asp Ala Ala Phe Lys Ile Ala Ala Thr Ala Ala Asn Ala
1 5 10 15

Ala Pro Thr Asn
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<210> 19
<211> 20
<212> PRT
<213> Escherichia coli

<400> 19
Ala Thr Ala Ala Asn Ala Ala Pro Thr Asn Asp Lys Phe Thr Val Phe
1 5 10 15

Glu Ser Ala Phe
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<210> 20
<211> 20
<212> PRT
<213> Escherichia coli

<400> 20
Asp Lys Phe Thr Val Phe Glu Ser Ala Phe Asn Lys Ala Leu Asn Glu
1 5 10 15

Cys Thr Gly Gly
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<210> 21
<211> 20
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<400> 21
Asn Lys Ala Leu Asn Glu Cys Thr Gly Gly Ala Tyr Glu Thr Tyr Lys
1 5 10 15

Phe Ile Pro Ser
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<210> 22
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<400> 22
Ala Tyr Glu Thr Tyr Lys Phe Ile Pro Ser Leu Glu Ala Ala Val Lys
1 5 10 15

Gln Ala Tyr Ala
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<210> 23
<211> 20
<212> PRT
<213> Escherichia coli

<400> 23
Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr Val Ala Ala Ala
1 5 10 15

Pro Glu Val Lys
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<210> 24
<211> 20
<212> PRT
<213> Escherichia coli

<400> 24
Ala Thr Val Ala Ala Ala Pro Glu Val Lys Tyr Ala Val Phe Glu Ala
1 5 10 15

Ala Leu Thr Lys
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<210> 25
<211> 20
<212> PRT
<213> Escherichia coli

<400> 25
Tyr Ala Val Phe Glu Ala Ala Leu Thr Lys Ala Ile Thr Ala Met Thr
1 5 10 15

Gln Ala Gln Lys
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<210> 26
<211> 20
<212> PRT
<213> Escherichia coli

<400> 26
Ala Ile Thr Ala Met Thr Gln Ala Gln Lys Ala Gly Lys Pro Ala Ala
1 5 10 15

Ala Ala Ala Thr
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<210> 27
<211> 20
<212> PRT
<213> Escherichia coli

<400> 27
Ala Gly Lys Pro Ala Ala Ala Ala Thr Gly Ala Ala Thr Val Ala
1 5 10 15

Thr Gly Ala Ala
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<210> 28
<211> 20
<212> PRT
<213> Escherichia coli

<400> 28
Gly Ala Ala Thr Val Ala Thr Gly Ala Ala Thr Ala Ala Ala Gly Ala
1 5 10 15

Ala Thr Ala Ala
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<210> 29
<211> 16
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<400> 29
Thr Ala Ala Ala Gly Ala Ala Thr Ala Ala Ala Gly Gly Tyr Lys Ala
1 5 10 15

<210> 30
<211> 20
<212> PRT
<213> Escherichia coli

<400> 30
Ile Ala Lys Val Pro Pro Gly Pro Asn Ile Thr Ala Glu Tyr Gly Asp
1 5 10 15

Lys Trp Leu Asp
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<210> 31
<211> 20
<212> PRT
<213> Escherichia coli

<220>
<223> all occurrences of Xaa=hydroxyproline

<400> 31
Ile Ala Lys Val Xaa Pro Gly Xaa Asn Ile Thr Ala Glu Tyr Gly Asp
1 5 10 15

Lys Trp Leu Asp
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<210> 32
<211> 20
<212> PRT
<213> Escherichia coli

<400> 32
Thr Ala Glu Tyr Gly Asp Lys Trp Leu Asp Ala Lys Ser Thr Trp Tyr
1 5 10 15

Gly Lys Pro Thr
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<210> 33
<211> 20
<212> PRT
<213> Escherichia coli

<400> 33
Gly Ala Gly Pro Lys Asp Asn Gly Gly Ala Cys Gly Tyr Lys Asn Val
1 5 10 15

Asp Lys Ala Pro
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<210> 34
<211> 20
<212> PRT
<213> Escherichia coli

<400> 34
Gly Ala Gly Pro Lys Asp Asn Gly Gly Ala Cys Gly Tyr Lys Asp Val
1 5 10 15

Asp Lys Ala Pro
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<210> 35
<211> 20
<212> PRT
<213> Escherichia coli

<400> 35

Cys Gly Tyr Lys Asp Val Asp Lys Ala Pro Phe Asn Gly Met Thr Gly
1 5 10 15

Cys Gly Asn Thr
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<210> 36

<211> 22

<212> PRT

<213> Escherichia coli

<400> 36

Cys Gly Phe Asn Gly Met Thr Gly Cys Gly Asn Thr Pro Ile Phe Lys
1 5 10 15

Asp Gly Arg Gly Cys Gly
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<210> 37

<211> 20

<212> PRT

<213> Escherichia coli

<400> 37

Pro Ile Phe Lys Asp Gly Arg Gly Cys Gly Ser Cys Phe Glu Ile Lys
1 5 10 15

Cys Thr Lys Pro
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<210> 38

<211> 20

<212> PRT

<213> Escherichia coli

<400> 38

Ser Cys Phe Glu Ile Lys Cys Thr Lys Pro Glu Ser Cys Ser Gly Glu
1 5 10 15

Ala Val Thr Val
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<210> 39

<211> 20

<212> PRT

<213> Escherichia coli

<400> 39

Glu Ser Cys Ser Gly Glu Ala Val Thr Val Thr Ile Thr Asp Asp Asn
1 5 10 15

Glu Glu Pro Ile
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<210> 40

<211> 20
<212> PRT
<213> Escherichia coli

<400> 40
Thr Ile Thr Asp Asp Asn Glu Glu Pro Ile Ala Pro Tyr His Phe Asp
1 5 10 15
Leu Ser Gly His
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<210> 41
<211> 20
<212> PRT
<213> Escherichia coli

<400> 41
Ala Pro Tyr His Phe Asp Leu Ser Gly His Ala Phe Gly Ser Met Ala
1 5 10 15
Asp Asp Gly Glu
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<210> 42
<211> 20
<212> PRT
<213> Escherichia coli

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Ala Phe Gly Ser Met Ala Asp Asp Gly Glu Glu Gln Lys Leu Arg Ser
1 5 10 15
Ala Gly Glu Leu
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<210> 43
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<212> PRT
<213> Escherichia coli

<400> 43
Glu Gln Lys Leu Arg Ser Ala Gly Glu Leu Glu Leu Gln Phe Arg Arg
1 5 10 15
Val Lys Cys Lys
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<210> 44
<211> 20
<212> PRT
<213> Escherichia coli

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Glu Leu Gln Phe Arg Arg Val Lys Cys Lys Tyr Pro Asp Asp Thr Lys
1 5 10 15
Pro Thr Phe His

<210> 45
 <211> 20
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 <213> Escherichia coli

<400> 45
 Tyr Pro Asp Asp Thr Lys Pro Thr Phe His Val Glu Lys Ala Ser Asn
 1 5 10 15

Pro Asn Tyr Leu
 20

<210> 46
 <211> 20
 <212> PRT
 <213> Escherichia coli

<400> 46
 Val Glu Lys Ala Ser Asn Pro Asn Tyr Leu Ala Ile Leu Val Lys Tyr
 1 5 10 15

Val Asp Gly Asp
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<210> 47
 <211> 20
 <212> PRT
 <213> Escherichia coli

<400> 47
 Val Glu Lys Gly Ser Asn Pro Asn Tyr Leu Ala Ile Leu Val Lys Tyr
 1 5 10 15

Val Asp Gly Asp
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<210> 48
 <211> 20
 <212> PRT
 <213> Escherichia coli

<400> 48
 Ala Ile Leu Val Lys Tyr Val Asp Gly Asp Gly Asp Val Val Ala Val
 1 5 10 15

Asp Ile Lys Glu
 20

<210> 49
 <211> 20
 <212> PRT
 <213> Escherichia coli

<400> 49

Gly Asp Val Val Ala Val Asp Ile Lys Glu Lys Gly Lys Asp Lys Trp
1 5 10 15

Ile Glu Leu Lys
20

<210> 50
<211> 20
<212> PRT
<213> Escherichia coli

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Lys Gly Lys Asp Lys Trp Ile Glu Leu Lys Glu Ser Trp Gly Ala Val
1 5 10 15

Trp Arg Ile Asp
20

<210> 51
<211> 20
<212> PRT
<213> Escherichia coli

<400> 51
Thr Pro Asp Lys Leu Thr Gly Pro Phe Thr Val Arg Tyr Thr Thr Glu
1 5 10 15

Gly Gly Thr Lys
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<210> 52
<211> 20
<212> PRT
<213> Escherichia coli

<400> 52
Val Arg Tyr Thr Thr Glu Gly Gly Thr Lys Ser Glu Val Glu Asp Val
1 5 10 15

Ile Pro Glu Gly
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<210> 53
<211> 20
<212> PRT
<213> Escherichia coli

<400> 53
Ser Glu Val Glu Asp Val Ile Pro Glu Gly Trp Lys Ala Asp Thr Ser
1 5 10 15

Tyr Ser Ala Lys
20

<210> 54
<211> 33

<212> PRT
<213> Escherichia coli

<220>
<223> all occurrences of Xaa=hydroxyproline

<400> 54
Ala Asp Ala Gly Tyr Thr Xaa Ala Ala Ala Ala Thr Xaa Ala Thr Xaa
1 5 10 15
Ala Ala Thr Xaa Ala Ala Ala Gly Gly Lys Ala Thr Thr Asp Glu Gln
20 25 30
Lys

<210> 55
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<400> 55
Ala Lys Ser Thr Trp Tyr Gly Lys Pro Thr Gly Ala Gly Pro Lys Asp
1 5 10 15
Asn Gly Gly Ala
20

<210> 56
<211> 20
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<400> 56
Glu Ser Trp Gly Ala Val Trp Arg Ile Asp Thr Pro Asp Lys Leu Thr
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Gly Pro Phe Thr
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<210> 57
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<220>
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Val Gln Gln Tyr Thr Val Ala Leu Phe Leu Ala Val Ala Ser Cys Arg	
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gcc cgc gcc tcc tac gcc gcc gac gcc ggc tac gcc ccc gcc act ccc	154
Ala Arg Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Ala Pro Ala Thr Pro	
-5 -1 1 5 10	
gcc acc ccg gct acc ccc gcg gcc cca ggc gca gcg gtg cca gca ggg	202
Ala Thr Pro Ala Thr Pro Ala Ala Pro Gly Ala Ala Val Pro Ala Gly	
15 20 25	
aag gcg gcg acc gag gag cag aag ctg atc gag aag atc aac gcc ggc	250
Lys Ala Ala Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn Ala Gly	
30 35 40	
ttc aag gcc gcc gtg gcg gcc gcc gcg ggc gtc ccg cca ggc gac aag	298
Phe Lys Ala Ala Val Ala Ala Ala Gly Val Pro Pro Gly Asp Lys	
45 50 55	
tac aag acg ttc gtc gaa acc ttc ggc aag gcc tcc aac aag gcc ttc	346
Tyr Lys Thr Phe Val Glu Thr Phe Gly Lys Ala Ser Asn Lys Ala Phe	
60 65 70	
ctg ggg gac ctc ccg acc aac tac gcc gat gtc aac tcc agg gcc cag	394
Leu Gly Asp Leu Pro Thr Asn Tyr Ala Asp Val Asn Ser Arg Ala Gln	
75 80 85 90	
ctc acc tcg aag ctc gac gcc gcc tac aag ctc gcc tac gac gcc gcc	442
Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr Asp Ala Ala	
95 100 105	
cag ggc gcc acc ccc gag gcc aag tac gac gcc tac gtc gcc acc ctc	490
Gln Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala Thr Leu	
110 115 120	
agc gag gcg ctc cgc atc atc gcc ggc acc ctc gag gtc cac gcc gtc	538
Ser Glu Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val His Ala Val	
125 130 135	
aag ccc gct gcc gag gag gtc aag cct atc ccc gcc gga gag ctg cag	586
Lys Pro Ala Ala Glu Glu Val Lys Pro Ile Pro Ala Gly Glu Leu Gln	
140 145 150	
atc gtc gac aag att gac gtc gcc ttc aga act gcc gcc acc gcc gcc	634
Ile Val Asp Lys Ile Asp Val Ala Phe Arg Thr Ala Ala Thr Ala Ala	
155 160 165 170	
aac gcc gcc ccc acc aac gac aag ttc acc gta ttc gag acc acc ttt	682
Asn Ala Ala Pro Thr Asn Asp Lys Phe Thr Val Phe Glu Thr Thr Phe	
175 180 185	
aac aag gcc atc aag gag agc acg ggc ggc acc tac gag agc tac aag	730
Asn Lys Ala Ile Lys Glu Ser Thr Gly Gly Thr Tyr Glu Ser Tyr Lys	
190 195 200	
ttc att ccc acc ctt gag gcc gcc gtt aag cag gcc tac gcc gcc acc	778
Phe Ile Pro Thr Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala Ala Thr	
205 210 215	
gtc gca tcc gcg ccg gag gtc aag tac gcc gtc ttt gag acc gcg ctg	826
Val Ala Ser Ala Pro Glu Val Lys Tyr Ala Val Phe Glu Thr Ala Leu	

220	225	230	
aaa aag gcg gtc acc gcc atg tcc gag gcc cag aag gaa gcc aag ccc			874
Lys Lys Ala Val Thr Ala Met Ser Glu Ala Gln Lys Glu Ala Lys Pro			
235	240	245	250
gcc acc gcc acc ccg acc ccc acc gca act gcc gcg gcc gcg gtg gcc			922
Ala Thr Ala Thr Pro Thr Pro Thr Ala Thr Ala Ala Ala Ala Val Ala			
	255	260	265
acc aac gcc gcc ccc gtc gct gct ggt ggc tac aaa atc tgatcaactc			971
Thr Asn Ala Ala Pro Val Ala Ala Gly Gly Tyr Lys Ile			
	270	275	
gctagcaata tacacatcca tcatgcacat atagagctgt gtatgtatgt gcatgcatgc 1031			
cgtggcgccg cgcaagtttg ctcataatta attcttggtt ttcggttgctt gcatccacga 1091			
gcgaccgagc ccgtggatag tcgcatgtgt atgtaatttt ttctgagaaa tgtgtatatg 1151			
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Cys Arg Ala Arg Ala Ser Tyr Ala Ala Asp Ala Gly Tyr Ala Pro Ala			
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Thr Pro Ala Thr Pro Ala Thr Pro Ala Ala Pro Gly Ala Ala Val Pro			
	10	15	20
Ala Gly Lys Ala Ala Thr Glu Glu Gln Lys Leu Ile Glu Lys Ile Asn			
	25	30	35
Ala Gly Phe Lys Ala Ala Val Ala Ala Ala Ala Gly Val Pro Pro Gly			
	45	50	55
Asp Lys Tyr Lys Thr Phe Val Glu Thr Phe Gly Lys Ala Ser Asn Lys			
	60	65	70
Ala Phe Leu Gly Asp Leu Pro Thr Asn Tyr Ala Asp Val Asn Ser Arg			
	75	80	85
Ala Gln Leu Thr Ser Lys Leu Asp Ala Ala Tyr Lys Leu Ala Tyr Asp			
	90	95	100
Ala Ala Gln Gly Ala Thr Pro Glu Ala Lys Tyr Asp Ala Tyr Val Ala			
	105	110	115
Thr Leu Ser Glu Ala Leu Arg Ile Ile Ala Gly Thr Leu Glu Val His			
	125	130	135
Ala Val Lys Pro Ala Ala Glu Glu Val Lys Pro Ile Pro Ala Gly Glu			
	140	145	150

Leu Gln Ile Val Asp Lys Ile Asp Val Ala Phe Arg Thr Ala Ala Thr
155 160 165

Ala Ala Asn Ala Ala Pro Thr Asn Asp Lys Phe Thr Val Phe Glu Thr
170 175 180

Thr Phe Asn Lys Ala Ile Lys Glu Ser Thr Gly Gly Thr Tyr Glu Ser
185 190 195 200

Tyr Lys Phe Ile Pro Thr Leu Glu Ala Ala Val Lys Gln Ala Tyr Ala
205 210 215

Ala Thr Val Ala Ser Ala Pro Glu Val Lys Tyr Ala Val Phe Glu Thr
220 225 230

Ala Leu Lys Lys Ala Val Thr Ala Met Ser Glu Ala Gln Lys Glu Ala
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Lys Pro Ala Thr Ala Thr Pro Thr Pro Thr Ala Thr Ala Ala Ala Ala
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Val Ala Thr Asn Ala Ala Pro Val Ala Ala Gly Gly Tyr Lys Ile
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<211> 20

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<400> 59

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Ala Thr Thr Asp
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Ala Asp Ala Gly Tyr Thr Pro Ala Ala Ala Ala Thr Pro Ala Thr Pro
1 5 10 15

Ala Ala Thr Pro
20

F'
cont